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The Greening of Asia

Unlike North America and Europe before it, Asia is being asked to perform two tricks at the same time: industrialize while protecting the environment

How well the rapidly growing economies of Asia master the new science of sustainable development has major implications for the rest of the world.

"Rapid economic growth in Asia is having increasing transboundary impacts and affecting the global environment," notes Sally Thornton, Policy Advisor at the International Affairs Branch at Environment Canada. The sustainable use of renewable resources and the management of shared resources, such as fish stocks, are major challenges which

will require efforts by Asian nations. Stabilization of greenhouse gases in the region will require a concerted international effort.

Many factors are driving the greening of Asia. "External pressures are significant," says Dennis Rondinelli, Professor of International Management at the University of North Carolina. Development lenders such as the World Bank, the Asian Development Bank and bilateral aid-donors "have all given

a great deal of attention to the environment, and that's put a lot of pressure on Asian governments," Dr. Rondinelli says.

International agreements such as the Montreal Protocol also have some impact in Asia, but private sector standards set by the International Standards Organization (ISO) will have a greater effect, according to Sherill Owen, the Environmental Industries Coordinator at Industry Canada focused on the Asia-Pacific region.

"They're very interested in ISO 14000 (the upcoming environmental management systems standard) because they've watched ISO 9000 (the quality standard) become a requirement for doing business with a lot of companies in the developed countries," Ms. Owen reports.

There is a domestic demand for environmental protection. "Countries are starting to see the negative economic impacts of

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poor environmental management," Ms. Thornton said. "Resources that used to be readily accessible are becoming scarce, and increasingly expensive to extract. As well, health care costs for illnesses caused by polluted air and the lack of clean water and proper sewage systems are mounting."

Polluted urban air and drinking water also sparks calls for cleanup action. In India, for example, 70% of the water supply is polluted and is blamed for two-thirds of all the illnesses in the country. The cost of installing an adequate water and sewage treatment infrastructure in India is estimated at \$140 billion, according to a recent report by the Globe Foundation of Canada.

Another force for sustainable development is multinational corporations, whose Asian operations are generally the most environmentally advanced in the region. "It's part of corporate policy that they apply around the world," says Gilles Potvin, environmental trade officer at Foreign Affairs Canada.

Government-mandated environmental protection varies widely throughout the region. Japan's regulations and compliance levels are similar to Western industrial countries, Thornton said. Many Asian countries have adopted national environmental laws.

Often, however, environmental legislation is on the books, but ineffective. "Penalties in many countries are so low, companies will pay the fines and not clean up the pollution," says Dr. Rondinelli. The general belief, in Asia as elsewhere, is that "environmental concern is proportionate to the level of economic development," Mr. Potvin says.

This axiom appears to be borne out by the money spent by businesses and governments on environmental goods and services. Japan, with a U.S.\$65 billion environmental market in 1994, according to Environmental Business International Inc. (San Diego, Calif.), a research and publishing firm dedicated to the environmental industry, represents 82% of the total Asian environmental products and services market. Japan is a rich, mature environmental market, comprising 1.7% of GDP, with annual growth estimated at 2.7% by EBI.

A large step down in environmental mar-

ket size (\$8 billion environmental sales collectively), but growing three times as fast, are four newly industrialized countries: South Korea, Taiwan, Hong Kong, and Singapore, EBI reported. Market growth is estimated at 5-12% annually. Environmental expenditures comprise just over 1% of GDP.

Emerging economic successes Thailand, Indonesia, Malaysia and the Philippines form the next tier, with collective environmental purchases of \$3 billion. These are the fastest expanding environmental markets, with growth in the 18-25% range, according to EBI. Current spending amounts to less than 1% of GDP.

India (\$1 billion) and China (\$1.6 billion) with their huge populations and burgeoning economies are at the bottom tier. Growth in environmental expenditures is estimated at a brisk 15-20% annually, but amounts to only 0.3-0.4% of GDP, according to EBI.

These growth rates in environmental purchases are impressive, but some experts sound a note of caution.

"The need is certainly there, but they're not that quick to buy," says Joseph W. Harrison, president of the American Environmental Technology Consortium in Asia. "Environment, particularly remediation, is not that high on their priority list except when they're forced into it," he says.

The Canadian Government's role is to lend expertise, provide funding, and open the door for Canadian environmental firms, said Dr. Zhizhong Si, senior environmental specialist at the Asia Branch of the Canadian International Development Agency (CIDA). For example, CIDA is funding a project to give Vietnam's 1994 environmental law teeth by developing regulations, training staff and equipping offices and laboratories.

Canada has also led the way in encouraging the Asia-Pacific Economic Cooperation forum (APEC) to elevate environmental concerns. The effort is showing results. Sustainable development is the subject of APEC's annual meeting this fall.

"APEC is still seen as an economic development group, but Canada is trying to make sure it's sustainable development," Ms. Owen says.

Experts predict more green taxes

When experts across OECD countries are asked to predict changes in the way governments will ensure progress on environment and sustainability issues, their strongest agreement is on the increased use of green taxes and user fees.

Fully two-thirds (68%) of the 100 experts surveyed* during January 1996 from across the 26 countries belonging to the Organization for Economic Cooperation and Development (OECD) agreed that "governments will increasingly apply user fees and taxes (e.g., on commuters, park users, natural resource companies) both as economic instruments to change behaviour and as ways of generating the revenue needed to maintain government environmental programs."

Proponents of economic instruments and other "in and out" approaches argue that governments need only intervene once (e.g., to change taxes) then leave it to the action of the marketplace to ensure progress. Governments would continue their role of monitoring progress towards environmental goals.

While individual green taxes and fees exist in North America, European countries are most advanced in applying green taxes. In fact, Sweden, Norway, Denmark and the Netherlands all have official government tax reform initiatives underway that seek to shift the tax burden away from "goods" (i.e., employment and income) over to "bads" (i.e., pollution and resource depletion).

The other major area of consensus the survey found among experts is that over six in ten (63%) agree with the prediction that, "on issues with global impacts, the role of national governments will increasingly be on negotiating, then ensuring national compliance with, international environmental agreements."

The globalization of environmental issues has already been posing significant challenges for national governments and multilateral agencies working to negotiate then implement international agreements on everything from hazardous waste to climate change. If experts are right, further growth in the number of issues needing to be resolved globally will no doubt require the application of new management approaches and resources by governments.

Beyond these points of consensus, the survey found that international experts were more divided on a number of other questions, including whether government spending cuts would undermine their ability to enforce existing environmental regulations and whether leading multinational companies will continue making progress towards sustainability regardless of what role governments take.

* SOURCE: The January 1996 GlobeScan survey of sustainable development experts across OECD countries conducted by Synergistics Consulting of Toronto.

The business case for sustainability



Leading multinational corporations are showing that a commitment to sustainable development can lower costs and expand sales

The bottom line benefits of improved environmental performance are dispelling old myths that profits shrink when companies go beyond regulatory requirements. While more adaptable regulations may be necessary to prompt these win-win results, a growing number of major corporations are finding this approach makes good business sense.

In the United States, Project XL was introduced a year ago by the Environmental Protection Agency (EPA) to assist corporations to obtain regulatory flexibility in exchange for enhanced environmental performance.

One of the early "XL" projects involves 3M Company of St. Paul, Minnesota. 3M has proposed that the EPA issue three of its factories plant-wide, multi-media permits that would give the "Scotch" brand tape maker greater flexibility to concentrate investment where it could be most environmentally effective. The new permits would set emissions caps below existing regulatory limits, simplify reporting requirements, and require development of an Environment Management System to validate performance. The proposal is in negotiations for final approval.

"Our biggest difficulty with current environmental regulations is the time lines to move through the environmental permit process for the introduction of new technologies or product lines," said Thomas Zosel, Manager of Environmental Initiatives for 3M. "Project XL gives us an opportunity to demonstrate a more cost effective approach to achieving superior environmental performance which will help both the envi-

ronment and our bottom line," he said.

Going beyond regulatory requirements has helped another U.S. company, E.I. DuPont Chemicals Ltd., reap financial returns from its commitment to sustainable development.

DuPont corporate policy dictates that all new or modified company plants, anywhere in the world, install the best cost effective environmental technology, even if not required by local standards. This environmental approach influenced the design and operation of a new manufacturing facility recently completed in Asturias, Spain.

In designing this facility, "we aimed for zero emissions and zero wastes," said Jorge Scursoni, Environmental Manager of DuPont Iberica. "Although that goal was not realistically attainable, the \$35 million invested in

pre-planning and state-of-the-art environmental protection equipment has resulted in extremely low air emissions, effluent discharges and wastes that will save the company millions of dollars every year," said Mr. Scursoni. These savings result from reduced raw material inputs and the avoided cost of monitoring, treating and disposing of wastes.

Major Canadian corporations are also profiting from an enlightened approach to environmental management. Mississauga-based Northern Telecom Limited (Nortel) spent \$1 million to eliminate the use of CFCs in its manufacturing processes earlier than was called for under the Montreal Protocol on Ozone Depleting Substances. The company estimates it saved \$4 million in avoided costs to purchase and dispose of CFCs



Green inside and out: 400 acre habitat area surrounds new DuPont plant in Spain.

during the three-year phase-in period. Another case of a win for the environment and the bottom line.

Nortel followed up this proactive success by adopting a comprehensive Environmental Management System (EMS) and establishing four new reduction targets for the company: to reduce solid waste by 50%; pollution releases by 50%; paper purchases by 30%; and energy consumption by 10%, all by the year 2000, using 1993 as the base year. These targets have been set with shareholders in mind as much as the environment.

"Improved environmental performance has a direct positive impact on the corporation's bottom line," says Elizabeth Rose, Vice President of Employee Satisfaction and Environment at Nortel.

Environmental leadership also improves a corporation's image, and consequently its marketing success. TransAlta Corporation of Calgary credits its environmental performance with playing an important role in gaining a 49% stake in a municipally owned electrical utility in Wellington, New Zealand.

"Our commitment and actions in support of sustainable development was an important consideration in Wellington's decision to partner with our company. In this case and in other markets, we are beginning to see sustainable development as an important competitive advantage," says Gord Lambert, TransAlta's Director of Sustainable Development.

In Alberta, a focus on sustainable development is helping TransAlta to realize new efficiencies within its own operations. For example, the company is reconfiguring systems and applying new technologies to reduce line losses on its transmission and distribution systems. "This will result in lower generation requirements, decreased greenhouse gas emissions and important cost savings," says Lambert.

These and other corporate leaders are demonstrating that the financial benefits of well-designed environmental programs can not only outweigh their costs, but that sustained environmental leadership is very much in their long-term financial interest. ●



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"To be sustainable, development must improve economic efficiency, protect and restore ecological systems, and enhance the well-being of all peoples."



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TECHNOLOGY

Sustainable development on the Web

The World Wide Web is becoming an excellent source of up-to-date information on sustainable development topics

The proliferation of internet sites addressing sustainable development issues is making it easier for individuals and organizations to act locally with global information. A number of specialized web sites, directories and services are also making it more convenient.

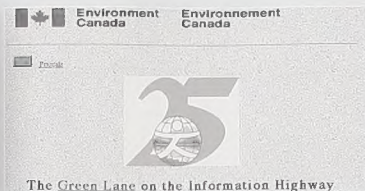
Web site directories are becoming an important tool for researchers because respected organizations, such as Environment Canada, the International Institute for Sustainable Development and the Earth Council are gathering, organizing and providing direct access to hundreds of web sites concerned with sustainable development issues from around the world.

The Winnipeg-based International Institute for Sustainable Development's home page, called IISDnet (<http://iisd.iisd.ca>) is an excellent first stop. In addition to up-to-date Canadian and international news on

sustainable development policies and practice, a calendar of up-coming conferences and a listing of recent publications, it provides a good listing of other web sites focused on sustainability.

IISDnet also provides one-touch access to another IISD site called *Linkages* (<http://www.iisd.ca/linkages>) where one can read the Earth Negotiations Bulletin's summaries of major intergovernmental meetings of the U.N. Commission on Sustainable Development, The Framework Convention on Climate Change, the Biological Diversity Convention, the International Conference on Population and Development, etc.

Environment Canada's WWW site, *The Green Lane* (<http://www.doe.ca>), is an excellent resource for policy, scientific and legislative information as it relates to sustainable development. Among the more



significant documents are the following:

A guide to Green Government:
<http://www.doe.ca/grngvt/guide.html>

The Canadian Environmental Protection Act:
<http://www.doe.ca/tandl/cepa>

The 1994 & 1995 Report of Canada to the United Nations Commission on Sustainable Development:
<http://www.doe.ca/agenda21>

The Inuit Economy: Sustaining a Way of Life:
<http://www.doe.ca/soer/inuit.html>

The Earth Council, based in San Jose, Costa Rica, also has a good web site and directory (<http://terra.ecouncil.ac.cr>) focusing on sustainable development issues. It provides internet tracking of developments arising out of the 1992 Earth Summit in Rio de Janeiro. Its web site directory has been organized under 22 categories, including biodiversity, earth sciences, environment, health, population and trade.

Topping the Earth Council's list of environmental servers is the *Amazing Environmental Organization Web Directory* (AEOWD) (<http://www.webdirectory.com>). "It is the largest exclusively environmental directory of environmental web sites," according to the directory's founder, John Dickson. AEOWD links thousands of active web sites,

organized into thirty categories such as Agriculture, Energy, General Environment, Interest Groups, Publications and Recycling. "I saw a need to start a site that would be focused on making it easier for people from around the world to locate environment-related web sites, starting right from our home page," wrote Mr. Dickson in an

"I saw a need to start a site that would be focused on making it easier for people from around the world to locate environment-related web sites..."



-John Dickson, AEOWD

e-mail interview with *TerraScope*.

Other examples of specialty internet servers include the Global Network of Environmental and Technology, *GNET* (<http://www.gnet.org>). It focuses primarily on environmental technology issues. Companies pay to have their organizations, technologies and services listed with GNET, but like all the other sites discussed in this article, "users can browse free of charge, providing a gateway for one-stop shopping for environmental technology information,"

according to Seth Finkel, Director of Marketing for Global Exchange Inc.

Two recently developed tools for internet research take a different approach. *Environment and Internet™*, a monthly publication from GAIA Corporation, is available on a subscription basis. "The internet is like the ultimate technology library, but without a card catalogue," said publisher June Bolstridge. "Our publication provides professional knowledge of internet data sources to reduce research time and use the information more effectively," she said. More information and a free sample issue can be obtained by sending an e-mail message to gaia@imssys.imssys.com.

Also available on a user-pay basis is "The Greendisk Guide to Environmental Computing." The guide was compiled by the editors of the Greendisk Paperless Environmental Journal and contains over 1000 listings of World Wide Web Sites, list servers, online databases and articles. The guide is available in electronic format from greendisk@igc.apc.org.

As the internet expands, tools and services such as these should help make sustainable development information more easily available for the individuals and organizations that need it.



the LEADING EDGE

California moves to cut smog

\$5.5 billion buys the state an "ultra-clean" gasoline

Command and control is alive and well in California. While environmental players in many jurisdictions are emphasizing alternatives to regulation, a major government-mandated program to reduce vehicle-generated air pollution is coming into effect in California.

The law requires gasoline sold in California to contain less of the lighter hydrocarbons found in petroleum, less sulphur, less benzene and more oxygen.

Proponents are hailing it as the biggest single vehicular emission reduction since the introduction of catalytic converters in 1975. They project significant environmental and public health payoffs.

When implemented June 1, the ultra-clean gasoline will be less prone to evaporating from the gas tank, reducing vehicle-generated, smog-creating emissions by 15 percent. That's the equivalent of taking 3.5 million of the smog-bound state's 24 million vehicles off the road, says Allan Hirsch of the California Air Resources Board (CARB).

Low-sulphur gasoline will increase the effectiveness of catalytic converters. Reduced benzene is expected to cut the cancer risk it poses by 30 percent to 40 percent, Mr. Hirsch says. Oxygenated fuel burns more completely, producing less carbon monoxide. And unlike changes to car design which



take years to reach full impact as old vehicles are retired, these cleaner gasoline benefits "are going to be immediate," he says.

The cost to refiners is steep. "We're not telling them how to make the changes, but no matter what route they choose, it's fairly expensive," says Mr. Hirsch.

California oil companies spent nearly \$5.5 billion on the capital costs of the additional refining steps that are necessary to produce ultra-clean gasoline, says Mr. Hirsch. Motorists will pay, too, with CARB estimating gasoline prices will rise nearly 10¢ a gallon.

How did the refiners react to the high-cost change? When the change was pro-

posed, the oil companies expressed concern about costs, Mr. Hirsch says, but "once the regulation passed in 1991, the oil industry took the attitude that they were going to make it work. They haven't dragged their feet, complained or tried to get the program watered down."

Development of the California program for cleaner fuels has been followed closely by other jurisdictions, including Canada. In October of 1995, the Canadian Council of Ministers of the Environment (CCME) recommended that Canadian national standards for cleaner gasoline and diesel fuel be developed and regulated.

Canadian technology turning Asian garbage into low-cost housing



In Indonesia, two innovative Canadian companies are helping a quarter million families call ten tons of garbage "home"



Urban Resource Technologies (URT) Inc. of Vancouver and Eton International of Toronto have recently sold URT's proprietary garbage-to-housing technology in Indonesia for \$200 million. URT's technology could solve two vexing problems—one environmental, one social—at the same time.

The deal is part of Canada's effort to tap the burgeoning market for environmental goods and services in the rapidly expanding Asian economies. It was one of twenty-seven environmental contracts and commercial agreements worth \$999.8 million that were signed during Prime Minister Jean Chretien's \$8.7 billion Team Canada trade mission to Asia this winter.

For URT, which developed its product from 1991-94, but found the domestic market unresponsive, Indonesia—with millions of ill-housed people and a rudimentary waste management infrastructure—proved to be the promised land. The makers of FibrPlast™ saw Jakarta's littered streets and laden landfills as an urban forest waiting to be harvested, then cheaply processed into durable lumber-like material, and sold to builders of low-cost homes.

By chance, a FibrPlast display caught the eye of Eton President John Sanderson during a stopover

on a trip to Indonesia in January 1994. Impressed, he took a sample to a meeting with the Indonesian Minister of Housing.

The Indonesian government was eager to see large numbers of inexpensive houses built. But durable, low-cost housing is a challenge in Indonesia, where rain and humidity combine with an abundant insect population to give short-shrift to ordinary inexpensive structures, said Penny Perfect, President of International Operations for URT. Furthermore, conventional building materials are scarce and expensive.

Garbage, however, is cheap. Plastic, paper, carpeting, straw, and waste wood—40% of the municipal garbage stream—can be fed into the heat, pressure and velocity techniques which create FibrPlast building material, URT President Gordon Muir says. The garbage-derived material is extruded

One of 250,000 new homes to be built in Indonesia using garbage-derived building material. (Up to 10 percent will be this size).

into dense, durable construction shapes well-suited to tropical climates.

"All we do is rearrange the molecules of something we call waste and make it into molecules of something that is useful and profitable," Ms. Perfect said.

Each basic FibrPlast house is made of 20,000 pounds of garbage processed into interlocking lengths of squared-off logs, roof tiles, doors and window frames. The material can be sawn, screwed, nailed, planed and painted. The expandable basic module provides 20 square metres of space and can be assembled in 1½ days, as opposed to 30 days for a conventional concrete structure of the same size, said Ms. Perfect.

In theory FibrPlast and Indonesia were a great fit, but how to make it happen? The crucial step was finding the right local partner. "We spent some months weeding out the people who were real from the tire-kickers," said Mr. Muir.

They settled on two seasoned businessmen who "have pretty good connections with the government elite and senior army people," Mr. Sanderson said. Ms. Perfect calls them "very well connected with...people

Continued on Page 8



Typical size of Indonesian homes being built using URT's FibrPlast™ material.

who can fast-track things over there."

Several months after reaching agreement in principle with the local partners, the government held a contest for innovative low-cost housing which attracted 55 entrants. Six were given special mention, and "we were at the top of the list," Mr. Sanderson said.

After that, the Indonesian government agreed to reimburse local contractors the US\$2,500-a-unit cost of FibrPlast materials that will be sold by URT's Indonesian subsidiary, said Mr. Muir. Priority access to municipal waste was also promised.

URT's deal calls for the Indonesian subsidiary to build nine factories and five garbage sorting plants over the next four years. The factories' output is to provide materials to build 250,000 homes. URT expects revenues of \$200 million for equipping


the plants, transferring technology, and training staff. That figure does not include its share of the subsidiary's operating profits.

Late this year, the first production factory—a \$6 million, 35,000-house-a-year facility—is to be constructed on government-donated land. Within six years, the entire production

complex is to be up and running.

Ms. Perfect predicts the FibrPlast operation will "give rise to a whole new industry. Indonesia will become a world leader in complete garbage recycling."

It would also open up a new market for

the Indonesians on three-wheeled bicycles fitted with boxes who collect litter as they cruise the streets. Ms. Perfect said these vendors already sell cans to metal recyclers, and soon will be peddling plastic, paper and wood waste to URT's first factory. 

"All we do is rearrange the molecules of something we call waste and make it into molecules of something that is useful and profitable,"

— Penny Perfect, President of International Operations, Urban Resource Technologies Inc.

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